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Measuring non-observed economy: informal and illegal

Measurement of Informal Economy under the Framework of the Mexican System of National Accounts

Note prepared by INEGI

Summary

The present document presents the measurement of the informal economy phenomena in the System of National Accounts of in accordance with the standards and recommendations of the International Labor Organization (ILO), the Delhi Group and other International Organizations.

The methodology was developed by the National Institute of Statistics and Geography (INEGI) with the objective to include informal activities in the Mexican national accounts and estimate their share in domestic product.

The end of the document contains a proposal for presenting the informal economy in the framework of Satellite Accounts in order to allow better monitoring and analysis of the behaviour of the informal sector in Mexico.

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I. Introduction

1. The aim of this document is to present the measurement of the informal economy within the framework of the Mexican National Accounts following the recommendations of leading international organizations. The following set of indexes was developed: Informality Index, Informality Gross Value Added, Informality Gross Value of Production, Informality Intermediate Consumption and Informality Production Account, disaggregated by 2007 NAICS for the Mexican case. The work was carried out during the rebasing of the national accounts to the 2008 Base Year.

II. Background

2. Informal economy is a phenomenon that is part of the society not only in Mexico but in all countries of the world. Initially it had not so big impact on the economy, but with the years the importance of informal activities has gradually increased. Nowadays they are significant part of the social environment and they need to be included in the national accounts.

3. For all countries of the world, but especially for developing countries, informal economy is increasing its influence since they have characteristic features that facilitate their inclusion in society.

4. The growth of the informal economy and the gradual replacement of the formal sector by the informal are mainly due to the low quality of life, the increased cost of living, the complex procedures for the opening of regulated jobs, the high tax rates and the demand for high-tech workforce.

5. In the case of Mexico, informality is one of the most recurrent problems for the society, which has increases as result of the problems listed above. According to the data published by the National Institute of Statistics and Geography (INEGI) for the third quarter of 2012, six of every ten jobs are informal.

6. The non-observed economy (NOE) is an important factor for the society. It is defined in the 2008 System of National Accounts (2008 SNA)[1] and the OECD Manual of Measurement of the Non Observed Economy (2002).

7. Four types of not-observed activities are identified according to their characteristics:

(a) The first refers to the underground activities, which integrate those activities that are productive and legal, but deliberately away from public authorities to avoid paying taxes or meet certain standards;

(b) The second are the illegal activities, which are all productive activities that generate goods and services prohibited by law or that are exercised by producers that do not have authorization to do so;

(c) The third are informal activities of non-incorporated enterprises and venture capital belonging to households, which are not registered, and finally;

[1] Commission of the European Communities - Eurostat, International Monetary Fund, Organization for economic cooperation and development, United Nations, World Bank: "System of National Accounts, 2008"

(d) The forth type refer to the productive activities carried out by households for consumption for own final use.

8. This classification made by international bodies defines informal economy in a more precise way.

9. The 15th International Conference of Labor Statisticians (XV ICLS) was agreed on a definition of informality, which is described as: *a set of units engaged in the production of goods and/or services with the primary objective of generating employment and incomes to the persons concerned*.

10. Thus, it also indicates that these units typically operate with a low level of organization, with little division of labor and use of capital; their costs of production are linked with the household.

11. The 2008 SNA indicates that production accounts are incomplete if the productive activities of the unincorporated enterprises of the Households Sector are not measured. This will lead to gaps in the measuring of production, which in turn leads to underestimated growth, deficit in the balance of trade and, consequently, underestimation of the global economy.

III. Sources of statistical information

12. In order to develop adequate measures of the informal it is necessary to identify suitable sources of information. As an autonomous public body INEGI, has a methodology that allows us to disseminate the necessary information, which is collected through censuses, surveys and administrative sources that generate statistical information.

A. Goods and services account for 2008 (G&SA 08)

13. The goods and services accounts (G&SA) are integrated into the System of National Accounts of Mexico[2] . They contain an account called supply and use of goods and services, called also "Account 0". It links the transactions with goods and services which take place between institutional units and sectors of economic activity.

14. The goods and services accounts explain the total supply of goods and services originating from the national and international markets and the use of those goods and services as intermediate consumption and final demand, which consists of the consumption of households, general government consumption, gross capital formation and exports to the rest of the world.

B. National survey of occupation and employment (ENOE, Spanish acronym)

15. The national survey of occupation and employment (ENOE) collects information about the occupational characteristics of the population at the national level, and by demographic and economic sectors. This information allows deepening the analysis of the aspects of employment[3].

[2] Information obtained from INEGI-(CBySO8)

[3] Information obtained from INEGI-(ENOE)

16. Its periodicity is quarterly and is presented at the national level and at the 32 federal entities. The ENOE is a fusion of the national survey of urban employment (ENEU) and the national survey of employment (ENE) that INEGI has carried out for several years in order to better capture the characteristics of the labor market in Mexico.

C. National survey of income and expenditure (ENIGH, Spanish acronym)

17. The national survey of income and expenditure (ENIGH) provides information about the amount, source and distribution of income and the expenditures of national or foreign households that reside within the national territory. It also integrates information about occupational and socio-demographic characteristics of household members, as well as characteristics of the housing infrastructure and household equipment[4].

18. The ENIGH provides a statistical overview about households' income and expenditure of, including their origin and distribution.

19. Its periodicity is every two years and its geographic coverage is national. For the ENIGH 2008 a sample population of 35,146 households was used, which allowed obtaining the necessary information.

D. National survey of micro business (ENAMIN, Spanish acronym)

20. The national survey of micro business (ENAMIN) aims to provide representative and reliable statistical information on the economic characteristics of micro businesses. It also provides information on the working conditions of the people involved in them[5].

21. According to this survey, economic units with a maximum of 6 people, including the owner are considered as micro. These units are initially detected through the occupation and employment questionnaire in ENOE, which identifies persons who work on their own or who are the owners of micro businesses (with the exception of the agricultural sector).

22. The survey covers employers and own account workers that reported to be in a main or secondary occupation, and collects information on activities that are carried out without permission or a record in any organization or institution of the public sector.

E. 2009 Economic Census 2009 (CE 2009, Spanish acronym)

23. The Economic Census (CE) is the most complete survey of the Mexican economy carried out by INEGI. It provides to the Mexican society and other users information on economic activities, with the exception of the primary sector, because that is covered by the Agricultural Census[6].

24. The information available through the census allows developing of public policies aimed at the promotion, competitiveness, productivity and employment. It also provides information on the characteristics of small and medium enterprises. Its coverage is national and is published every five years.

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[4] Information obtained from INEGI-(ENIGH)
[5] Information obtained from the INEGI-ENAMIN
[6] Information obtained from INEGI-CE09

IV. Regulatory information sources

A. The North American Industrial Classification System of 2007 (2007 NAICS)

25. The NAICS is used as classification of economic activities[7]. In NAICS, economic units that have related production functions or production processes are classified in the same class of activity.

26. The 2007 NAICS consists of 20 sectors of economic activity, which in turn are sub-divided into 79 subsectors, 304 branches, 617 sub-branches and 1,049 activity classes.

B. System of National Accounts of 2008

27. The SNA is a coherent, systematic and integrated set of macroeconomic accounts, balance sheets and statistical tables, based on concepts, definitions, classifications and accounting rules accepted internationally, which constitute a complete record of the activities that take place within the economy and the interaction with the rest of the world.

28. The SNA offers information on the behavior of economic units and the activities that take place in the form of production or consumption; however, this information is biased or incomplete when the activity is not reflected fully.

29. In the SNA, two broad categories of units are distinguished: households and legal entities. The resident institutional units in the economy are grouped together into five mutually exclusive sectors:

(a) Nonfinancial corporations

(b) Financial corporations

(c) Government units

(d) Institutions non-profit serving households (NPISHs)

(e) Households

30. These five sectors constitute the total economy. Each sector can be divided in turn into subsectors.

V. Theoretical and conceptual framework

31. In the field of statistical measurement of the informal economy, there are a number of standards and recommendations developed by international bodies that help to establish techniques and efficiently evaluate each country's Informal economy.

32. The ILO in response to this increasingly significant problem globally convened the XV International Conference of Labour Statisticians (ICLS) held in Geneva in 1993. The purpose was to establish a definition of the Informal Sector which would be globally adopted. The XV ICLS defines the informal sector as a set of units: engaged in the production of goods and/or services with the primary objective of generating employment and incomes for the persons concerned; not constituted as legal entities; lack of accounting and separation of the assets and the transactions of the producing unit and the household.

[7] Information obtained from INEGI-(NAICS07)

33. The ICLS XVII adopted three resolutions, the first two relating to recommendations on the technical work, and the third on future work in the area of labor statistics. It also adopted two sets of guidelines, which address specifically the statistical definition of informal employment, as well as how to calculate it.

34. The ICLS XVII, therefore, takes as a starting point the need to distinguish between employment in the informal sector and informal employment outside the informal sector[8].

35. As regards employment and the informal economy, the ICLS XVII points out firstly that the informal sector refers to production units as units of observation and informal employment refers to jobs as units of observation.

36. In regards to Informal employment, the ICLS XVII breaks it by type of production unit: enterprises of the formal sector, the informal sector enterprises and households. The Informal employment comprises:

(a) Own-account workers and employers employed in their own informal sector enterprises

(b) Contributing family workers

(c) Employees holding informal jobs

(d) Members of informal producers' cooperatives

(e) Own-account workers engaged in the production of goods exclusively for own final use by their household.

37. The so-called ICLS XV and XVII ICLS convened by the ILO (1993 and 2003) have been for the most part the carriers of knowledge on the Informal economy, both as regulatory framework and technical recommendations. However, there is also a group of experts on statistics of the informal sector created by the United Nations Statistical Commission in 1996 known as Delhi Group, whose role has been to elaborate on strategies and practices for the implementation of international standards and the development of a manual.

38. A method that helped further clarify the concept of Informal economy with respect to the occupation and informal employment is the so-called "matrix of Hussmanns" developed by Ralf Hussmanns, ILO. It established specific concepts that aim to explain and complement statistical measures of informal economy and employment.

39. This matrix allows divide the economic sector by presenting persons occupied in the rows and economic activities by employment status[9] in the columns.

40. In the case of Mexico, the ENOE collects information in the disaggregation presented in the following tables.

[8] 17TH ICLS - ILO

[9] For more information on the matrix Hussmanns see the Seventeenth ICLS

Table 1
Economic unit types

Distribution by type of economic unit
Companies and business
Companies incorporated in societies and corporations
Not constituted in societies business
Institutions
Private
Public
Managed by Governments
Not administered by Governments
The household sector
Informal sector
Paid domestic work
Self-subsistence agriculture
Situations of special character and not specified

**Source*: Instituto Nacional de Estadistica y Geografia (INEGI)

Table 2
Occupation

Position in the occupation
Subordinate and paid workers
Employees
With no salary
Employers
Self-employed persons
Unpaid workers
Unspecified

**Source*: Instituto Nacional de Estadistica y Geografia (INEGI)

Table 3
Informal employment

Classification according to the type of economic unit	Classification according to the position of the occupation										Total
	Subordinate workers paid				Employers		Self-employed owner		Workers not paid		
	Employees		Other forms of remuneration (non-wage)								
	Informa –	Formal	Informa –	Formal	Informa –	Formal	Informa –	Formal	Informa –	Formal	
Informal sector											
Domestic paid work											
Companies											
Government and institutions											
Agricultural units											
Subtotal											
Total											

**Source:* Matrix Hussmanns, 17TH Conference International of Labor Statisticians (ICLS).

41. However, the French researcher, Michel Séruzier, emphasizes the importance of measuring the informality phenomenon in line with the system of national accounts, since they provide more insights about the phenomena and allow a more comprehensive measurement of economic activities. The information provided by the national accounts, however, can be biased if unregulated and informal activities are not reflected.

42. In his book, "*Measure the economies of the countries according to the system of national accounts*" (2003)[10], Michel Séruzier explains that the measurement of a country's production could be inadequate if statistical and accounting under-reporting exists, but mostly if households and their multiple and dynamic activities are not covered.

43. This dynamic behavior implies that the phenomenon of informality is deeply integrated in the economy, resulting from the collective interactions of each factor of economic activity[11].

[10] Michel Séruzier "Measure the economies of the countries according to the system of national accounts", p. 335

[11] Marc Lavoie, in his book "Post-Keynesian economics", p. 18, explains that the individual is a social being, which is influenced by his environment, social class, culture, education and customs. Lavoie, indicates that each microeconomic decision that the individual take can lead to macro-economic paradoxes. He tries to explain the social phenomena (informal economy) as emergent property of a set of individuals who interact with each other and, consequently, generate new behaviours that cannot be observed in one or more isolated components.

44. The expanded concept of informality, included in the ILO Statistical Manual on the Informal Sector and Informal Employment, defines new characterization of the Informal employment outside the Informal Sector namely:

(a) The Agricultural Sector now considers the staff occupied without access to health institutions (regardless of position in the employment status).

(b) The domestic workers are considered part of the Informal employment.

(c) Unpaid workers are considered in the Informal Sector and Informal employment.

45. Domestic production can be measured at different levels of disaggregation, for individual economic agents (or institutional units), for groups of these units (or institutional sectors) or for the total economy.

VI. Methodological framework

46. The Manual on Measuring the NOE, proposes indirect methods and direct methods. The indirect include the physical input method and the monetary approach. The method developed in this document is part of the direct methods, which involve quantifying the Informal economy from direct sources of information such as surveys of employment (ENOE in the case of Mexico).

47. This methodology aims to develop a database of statistical series, enabling users and researchers to use it in the most suitable way.

48. The statistical technique to obtain an explicit measurement of the value of the Informal economy is *the "method of latent Variable"*, that allows to define an unobservable variable from a set of observable indicators. This technique reduces the dimensionality of the set of observations by keeping most of the observable variables collected in the study in the model.

49. The following matrix shows the number of variables that are intended to be explained or reduced as much as possible:

$$X = \begin{bmatrix} X_{11} & X_{12} & \cdots & X_{1p} \\ X_{21} & X_{22} & \cdots & X_{2p} \\ \vdots & \vdots & \ddots & \vdots \\ X_{n1} & X_{n2} & \cdots & X_{np} \end{bmatrix}$$

50. Where P defines the number of observed variables X, on n number of individuals.

51. If we assume that there are a number of observable variables, then the aim is to extract what they have in common and summarize it in an index, which serves as an indicator characterizing the unobservable variable.

52. Using the ENOE as main source of statistical information, 56 sub-sectors of the 2007 NAICS are considered as representative for the Informal Sector.

Table 4
NAICS industries representative for the informal sector

Sector	No. of subsectors	Description
21	1	Mining, excluding oil and gas extraction
22	0	Water and gas pipelines supply excluding electricity
23	3	Construction
31-33	16	Manufacturing industries
43-46	12	Trade
48 49	5	Transportation, postal and warehousing, excludes pipeline
51	3	Information in mass media
52	1	Financial services and insurance, excluding Central Banking
53	2	Real estate and rental of movable and intangible services
54	1	Professional, scientific and technical services
56	2	Support business and waste management services
61	1	Educational services
62	2	Health and social care services
71	2	Recreational, cultural, sporting and recreational services
72	2	Temporary accommodation and food and beverage preparation services
81	3	Other services, except Government activities
Total	**56**	

**Source*: Own elaboration with the SCNM 2008 data

53. The following two tables present the employment groups in the informal sector and informal employment in the formal sector for which the rates were calculated.

Table 5
Employment categories in the informal sector

Informal sector	
X 1 =	Salaried workers
X 2 =	Self-employed persons
X 3 =	Employers
X 4 =	Unpaid workers
X 5 =	Other workers

**Source*: Instituto Nacional de Estadistica y Geografia (INEGI)

Table 6
Informal employment in the formal sector

Informal employment in formal activities	
X 1 =	Self-employment in agriculture or subsistence
X 2 =	Workers without payment in units other than the Informal Sector
3 X =	Paid domestic service
X 4 =	Unprotected salaried workers working for formal sectors
5 X =	Workers not protected without remuneration fixed in formal sectors

**Source:* Instituto Nacional de Estadistica y Geografia (INEGI)

54. This procedure provides an informality rate from the relative proportions of each position in the total employment, thus reducing the dimensionality of the set of original variables.

55. The gross value of production (GVP) is estimated using the information on a number of variables collected in ENAMIN. The calculations for gross value of production, intermediate consumption and gross value added are done separately for the total micro businesses, informal micro businesses and formal microbusiness by kind of economic activity NAICS 2007:

$$GVP^{ENAMIN}_{(monthly)} = \left[\begin{array}{c} Income(Manufacturing, Services) \\ + \\ \Sigma\ (Business\ Income - Products\ purchased\ for\ resale) \\ + \\ (changes\ in\ inventories\ of\ work\ in\ progress\ and\ finished\ goods \end{array} \right]$$

$$GVP^{ENAMIN}_{(Annual)} = \left[\Sigma\ GVP\ (monthly) * (months\ worked) \right]$$

56. Intermediate consumption of the Informal Sector is estimated by excluding from the expenditures the contributions to the social security fund, the medical services and goods or products purchased for resale. The excluded items are considered effective social contributions and commercial margin respectively.

$$IC^{ENAMIN}(Annual) = \Sigma(Q47,01) + (Q47,03) + \cdots + (Q47,09) + (Q47,11) + (Q47,12)$$

57. Once the level of intermediate consumption of the micro units captured in ENAMIN is determined, the intermediate consumption-gross value added *(IC-GVA)* ratios are

calculated for each of the 56 sub-sectors of the NAICS 2007, where informal activities exist:

$$Ratio \quad IC - GVA \ (ENAMIN \ ) = \frac{IC_i}{GVA_i} \qquad where \quad i = 1,2,3, \cdots, 56$$

58. The ratios IC – GVA $_{(ENAMIN)}$ are applied to the annual GVA obtained by the econometric method, in order to generate the annual series of intermediate consumption and the gross value of production.

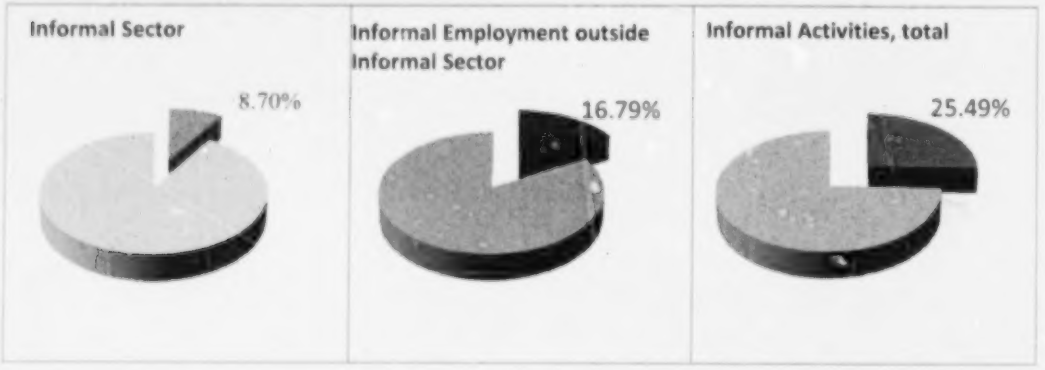
$IC = GVA\ annual * (ratio\ IC - GVA)_{ENAMIN}$

Therefore:

$_{Annual} GVP = IC + GVA$

59. The overall result of the application of this method to the 2008 base year and is the following: the informal Sector represented the 8.7% GDP and Informal employment outside the Informal is 16.79% of GDP, so that the total Informal economy measured by this methodology comes to 25.49% of the GDP for the year 2008.

Figure 1
Informal sector, Informal employment outside the informal sector and total informal economy, per cent of GDP, 2008



VII. Proposal for a satellite account

60. Since the aggregates of the national accounts do not allow a detailed measurement of the informal economy, the proposal for the implementation of a satellite account is considered by INEGI. The INEGI definition of satellite accounts states that: *"Particular accounting frameworks with items included, explicitly or implicitly, in the accounts of the Central framework, with complementary elements (monetary or physical units), concepts and additional alternative presentations, which allow the measurement of various variables considered important".*

61. The currently available basic statistics on a recurrent basis together with the administrative records and the economic indicators generated by the Mexican system of national accounts allow the development of methodology for "Satellite Account for the Informal Economy". It will provide direct and detailed measurement of the participation of the informality phenomenon in the national economy under the national accounts central framework. The Satellite accounts will rely on the following data sources:

(a) Economic Census 2009 (CE 2009)

(b) Account of goods and services (G&SA 08)

(c) National survey of income and expenditure (ENIGH)

(d) National occupation and employment survey (ENOE)

(e) Survey of micro business (ENAMIN)

(f) Administrative records

62. To compile the satellite account of the Informal economy, we propose a strategy that allows achieving a better quality of informality measurement, allowing:

(a) Territorial coverage (national, urban and Rural)

(b) Coverage of activities excluded by information gaps and/or method

(c) Analysis by size of production units

(d) Others

63. This strategy is composed of:

(a) Analysis of the demographic matrix of people occupied

(b) Development of the work positions matrix

(c) Measurement of the modes of production by institutional sector

(d) Development of the production account of the Informal Sector of households

(e) Personnel employed in the Informal sector of households

(f) Integration of production and generation of income accounts by NAICS 2007 sub-sector

(g) Productivity by NAICS sub-sector

(h) Socio-demographic characteristics of the population occupied in the Informal economy

(i) Development of publication and media outreach

VIII. Conclusions

64. Despite different interpretations of the informal economy, in reality it is a fact that it is not a desirable, nor for the country nor for the society. The condition for those who work in the informal sector, remain unfavorable because it implies a lack of employment benefits and social security as well as a bad record of their income which prevented its growth. However, no matter that many are willing to join formal employment; the cost of this opportunity is not attainable for a large portion of society.

65. For the country, informal economy is generally not desirable as it prevents the efficient use of resources and will impact the production system in a negative way, preventing GDP to grow at the expected levels. On the other hand, governments remain tolerant to such activity as informality allows remedying unemployment.

66. It is important that international organizations develop methodologies and measures of this phenomenon, in order to determine the magnitude of informality and include it in country's GDP as well as to evaluate the impact of informal activities on individual sectors. This will allow establishing public policies with economic and social effect that face and, in

the best of cases, resolve those gaps that impede the growth and economic development of the country.

67. The comprehensive approach that is developed in this document presents linking of the entire apparatus of the basic statistics (census, surveys, and administrative records) and the Mexican national accounts. Even though there are countless research works and analysis of informality derived from the basic statistics, there are not many that try to do this within the framework of national accounts of Mexico. Among the main challenges which can be identified are the following:

(a) Updating of weights based on the Census of population and housing 2010.

(b) To characterize the levels of the Informal economy (industry and employment) based on the results from rebasing Mexican national accounts to 2008 base year.

68. Finally, it would be worth making an effort to generate a supply - use matrix of the Informal Sector, bearing in mind, that the main institutional sector is the Household Sector.

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